

MISSOURI DEPARTMENT OF CONSERVATION

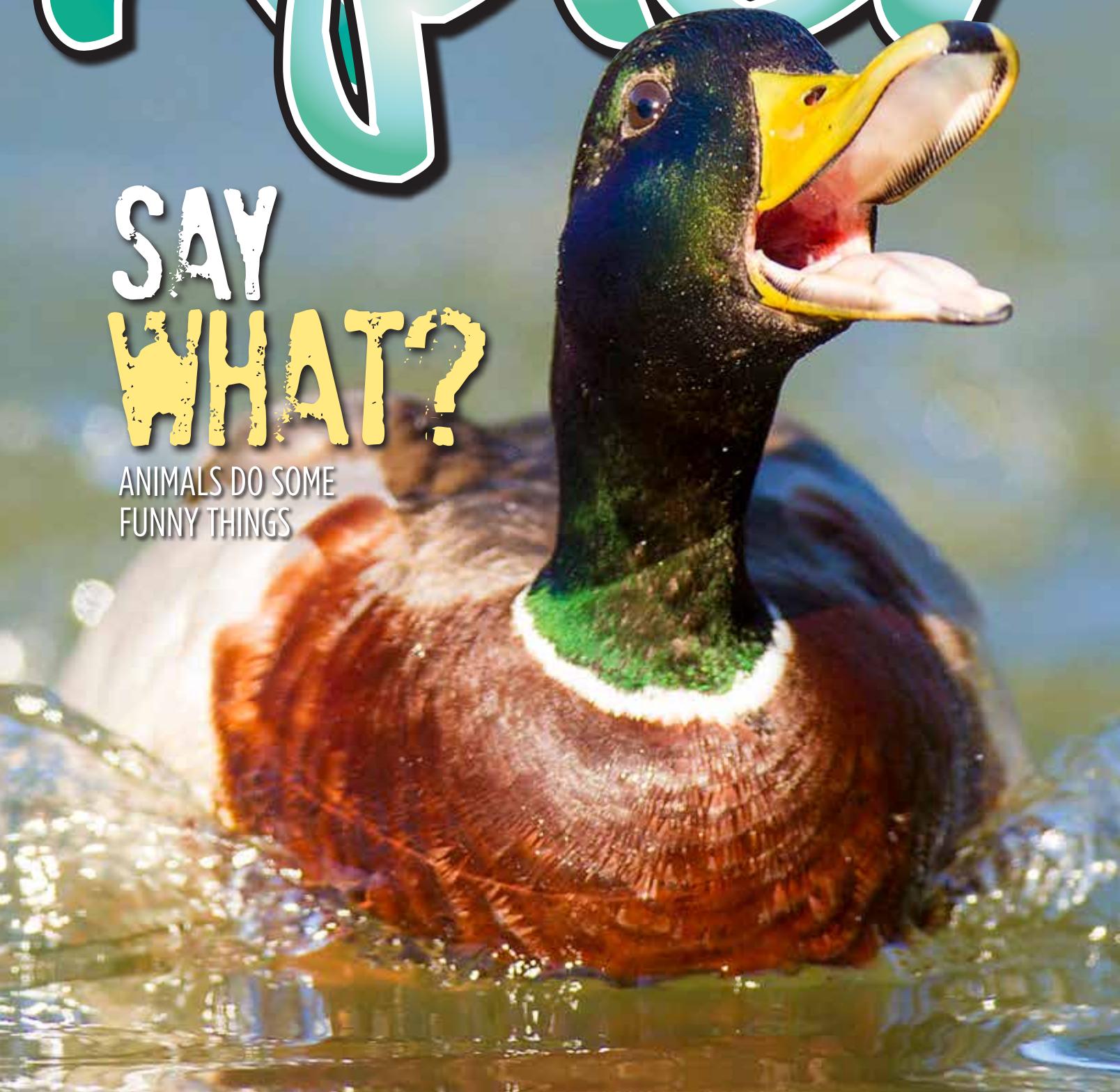


March/April 2019

Xplore

SAY WHAT?

ANIMALS DO SOME
FUNNY THINGS



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There's a feeding frenzy right under your feet!

12 Wild Memes

Animals do some funny things, and we have the photos to prove it.

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A king rail is about to get a frog in its throat. The skinny, camouflaged birds wade through wetlands to catch crayfish, insects, and other bite-sized aquatic creatures.

by Noppadol Paothong



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ON THE COVER

Mallard

by Noppadol Paothong

GET OUT!

FUN THINGS TO DO
AND GREAT PLACES
TO DISCOVER NATURE



CELEBRATE
WORLD WILDLIFE
DAY MARCH 3
by learning what
kinds of wildlife live
near you. Visit [mdc.
mo.gov/field-guide](http://mdc.mo.gov/field-guide)
to see what to look
for right now.

IT'S TIME TO PUT
UP BLUEBIRD
NEST BOXES!



BAG SOME MUSHROOMS.
Dimpled and delicious, morels
begin popping up on Missouri's
forest floors in mid-April. To
be safe, go with an experienced
mushroom hunter.



WATCH FOR WATER STRIDERS
on streams when the weather is warm.

HELP A TURTLE
CROSS THE
ROAD, but
only if it's
safe to
do so.



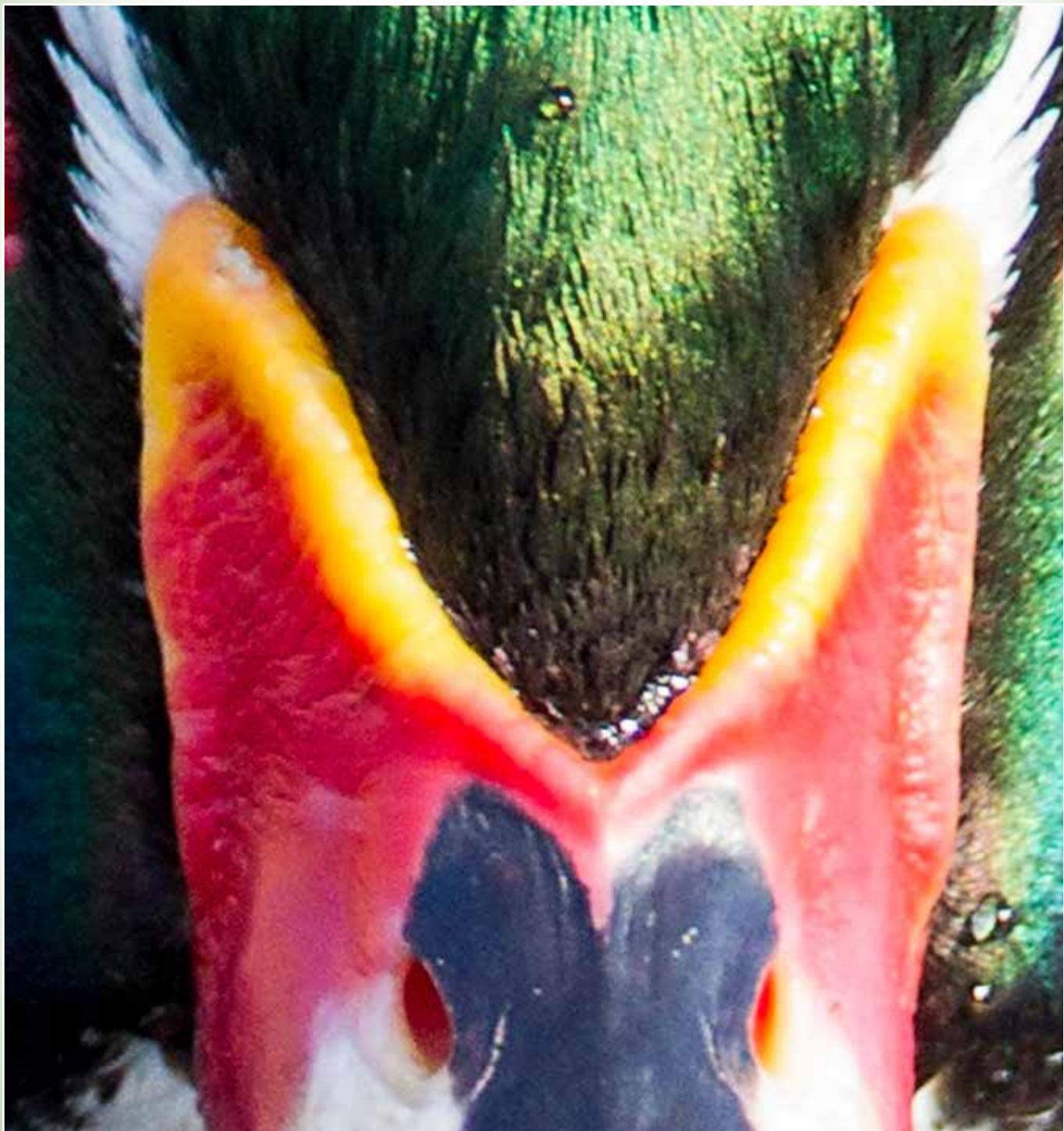
Are you age 9
or older? **SIGN
UP FOR BASIC
ARCHERY FOR
FAMILIES** at
Busch Shooting Range
and Outdoor Education
Center in the St. Louis
area. Call 636-300-0258
to register by March 22.



WHAT IS IT?

DON'T KNOW?

Jump to Page 20 to find out.



- 1 I'm colorful but seldom seen.
- 2 I swim in the water but nest in the trees.

- 3 A high, soft whistle is all you'll hear ...
- 4 ... as I take flight away from here.

Into the Wild cityscape



Did You Know?

Peregrine (pair-uh-grin) falcons are the fastest birds in the sky. When diving to attack prey, falcons free fall at speeds over 200 mph. Pairs of peregrines regularly nest atop buildings in Kansas City and St. Louis.

Peregrine falcon



LOOK

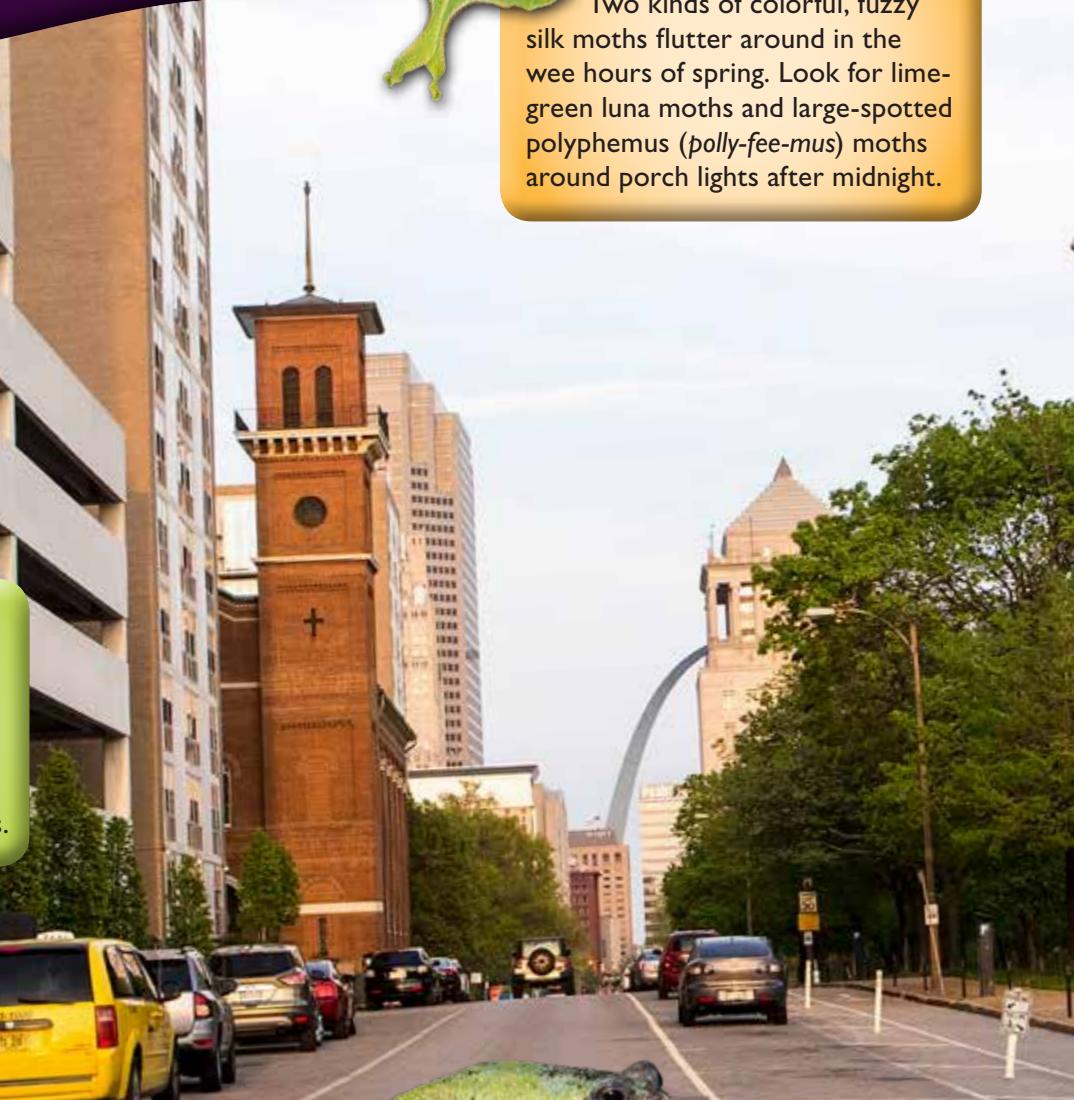
At dusk, watch for bats hunting for insects under streetlights. The winged mammals may be mistaken for birds in low light, but a bat's flight is far more fluttery.

Cities provide habitat for more plants and animals than you might think. Keep an eye out for these wild urban dwellers.



LOOK

Two kinds of colorful, fuzzy silk moths flutter around in the wee hours of spring. Look for lime-green luna moths and large-spotted polyphemus (polly-fee-mus) moths around porch lights after midnight.



Listen

On warm spring nights, listen for the musical, birdlike trill of the gray treefrog. Though hearing one is easy, seeing one is tough! The tiny frogs change color to blend in with their surroundings.





Take a Closer Look

Watch a bumblebee long enough, and you might see it land on a flower and vibrate its wings to create a whining buzz. This behavior, called buzz pollination, helps the bee shake more pollen off of the flower.

Bumblebee



Did You Know?

A ruby-throated hummingbird's wings normally flap about 50 times a second. But during high-speed maneuvers, they can beat up to 200 times a second!



Do More

All you need to welcome Missouri's smallest bird to your backyard is a hummingbird feeder. Fill it with a mixture of four parts water and one part sugar. In no time, the feisty flyers will zip in for a drink.



Heads Up!

If you find a nest of baby bunnies, leave them be! Although the mama rabbit may be nowhere to be found, rest assured she will return to take care of her babies.



Taste

Redbud trees look lovely when they bloom in early April. They're also good to eat. The hot-pink flowers taste sweet and nutty. Just watch out for bees while you're nibbling away. They like redbuds, too.

Eastern redbud



Take a Closer Look

When an American robin cocks its head to one side, it isn't listening. It's trying to get a better look at dinner — worms and other creepy-crawlies — sneaking through the grass.

The Dirt on Soil

by Bonnie Chasteen
illustrations by Shannon Beaumont

They're teeny-tiny and really, really hungry.

Careful where you step! Right under your feet, an invisible horde of hungry critters is working hard to keep trees growing tall, rivers running clean, and wildlife growing strong. Some critters eat leaves, while others supply roots with the minerals and water they need to grow deep. Other kinds of critters eat each other, and the whole hidden feeding frenzy maintains the world as we know it. Let's grab a handful of dirt, put a pinch of it under the microscope, and *Xplor* the soil food web.

Meet the Microbes

They may be microscopic, but soil critters are huge in number. A handful of dirt holds more soil microbes than there are people on Earth. That's a lot of life! This multitude of mini munchers also plays many important roles.

- **Bacteria and fungi** break down bits of leaves and minerals so roots can absorb their elements.
- Single-celled critters like **amoebae, ciliates, and rotifers** also help break down dead plants and minerals into particles that growing plants and other animals can use.
- **Nematodes** (microscopic worms) play many different roles depending on what they eat. Root feeders attack roots. Nematodes that eat bacteria and fungi can help control the kinds of nematodes that harm plants. Some nematodes are predators, and they help control the root-feeding nematodes.
- **Mites** and other microbugs can be shredders or predators. Shredders help bacteria, fungi, and other critters break down dead plants and animals. Predators eat shredders (and anything else they can overpower).



Bacteria



Threadlike fungi

Ciliate



Root-feeder nematode



Bacterial-feeder nematode



Predator nematode



Predator mite



Shredder springtail



Make Room for Earth-Movers

Larger critters are also part of the soil food web, and they play an important role as earth-movers. Earthworms, ants, and moles all spend their lives tunneling or making chambers in the soil. These pathways let in air and water, which most life-forms can't live without. The soil itself needs little spaces between its particles so water can soak in. After all, if water runs off, it takes everything with it, leaving behind nothing but ugly ruts and gullies.

- **Earthworms** eat decaying plant and animal matter and poop out castings that enrich the soil. Their tunnels also let in air and water, helping stabilize the soil and supporting the food web.
- **Ants** eat bits of plant and animal matter. Their tunnels and chambers are pathways for air and water.
- Think **moles** eat plant roots? Think again. They're strictly meat eaters, and they spend most of their time plowing through the soil in search of earthworms, grubs, and even small mice. If your mom hates Japanese beetles, tell her to give moles a break. They gobble up Japanese beetle grubs before they can grow up and eat her roses. Oh, and mole tunnels help air and water get into the soil, too.

The SOIL Food Web at Work



The Producers

- Plants use sunlight, air, water, and nutrients to grow and produce sugars and starches.
- Roots exude a starchy fluid that activates fungi.
- Organic matter is made up of leaf litter or compost.



The Clean-Up Crew

- Bacteria help make nutrients such as nitrogen available to other living things.
- Fungi help break down organic matter into minerals. They trade the minerals with plant roots in exchange for sugars.
- Single-celled critters like amoebae, ciliates, and rotifers help decompose plant and animal matter.



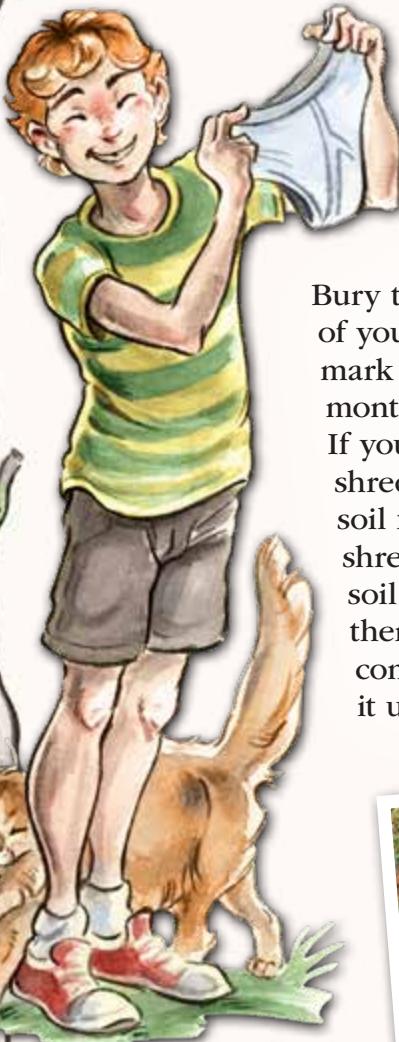
Friends and Enemies

- Nematodes are tiny worms that eat roots, bacteria, fungi, and even other nematodes.
- Mites shred leaf litter and eat other creatures.
- Earthworms, ants, and moles are earth-workers.



PLANT ROOTS: JON HELGASON, DREAMTIME.COM; ORGANIC MATTER: DAVID STONER; FUNGI: SOIL AND WATER CONSERVATION SOCIETY (SWCS). 2000. SOIL BIOLOGY PRIMER. REV. ED. ANKENY, IA: SWCS. NEMATODES, BACTERIA, PROTOZOA, AND PREDATORIAL ARTHROPOD: COURTESY OF ELAINE R. INGHAM/SOIL FOODWEB INC.; SPRINGTAL AND MOLE: JIM RATHER; ROBIN: NOPPADOL PATHONG

Play in the Dirt!



Soil Your Undies

You don't need a microscope to see proof your soil is full of hungry critters. All you need is a clean pair of all-cotton tighty-whities. Bury them in the top 6 inches of your soil. Mark the spot and mark your calendar. In two months, dig up your drawers. If you find a few clean, white shreds, you've got a healthy soil food web. If your shreds are stained, your soil critters need help. Give them a thick layer of fluffy compost, and they'll gobble it up before you know it!



Bury your shorts to reveal
THIS or THIS.



Your soil
is full of
hungry
critters.



Your
soil is
losing
nutrients.





Start a Compost Pile

Making compost is easy. All you need is a place to put vegetable scraps (no meat, bones, or grease), grass clippings, and leaves. Spray it with the garden hose during dry spells, and stir it with a rake once in a while. The microbes will do the rest. In six months to a year, you'll have a heap of crumbly, earthy-smelling compost for your garden.



Dig Yourself a Happy Place

Scientists have found that breathing soil microbes while you play in the dirt makes you feel happy. It's also fun, so get outside and start your spring garden!



Wild MEMES

by Xplor staff

Cute pets doing funny things must make up half the internet, right? But after looking through thousands of animal photos, we at *Xplor* are sure of one thing. Wild critters are just as funny as Fido and Fluffy. Need proof? Check out these meme-worthy shots.



All kidding aside, it would be hard to sneak up on a praying mantis. These predators have excellent eyesight and use their spiky arms to grab insects to eat.

COME AT ME BRO.



OR ARE YOU ... CHICKEN?

When a male greater prairie-chicken wants to attract a mate, he droops his wings, spreads his tail, and stamps his feet. His chicken dance looks funny to us, but not to female prairie-chickens.

DUCK. DUCK. DUCK. DUCK ...



GOOSE!

HANG IN THERE!



FRIDAY'S ALMOST HERE.

Thousands of mallard ducks, Canada geese, and other water birds refuel at Missouri's wetlands during their spring and fall migrations.

NO SNOW DAY!? WHAT DO YOU MEAN NO SNOW DAY?



Opossums have a few extra parts. Not only are they North America's only furbearer with a pouch, but they also have 50 teeth — more than any other Missouri mammal.

Now that's quite a mouthful!

A raccoon's paw has 10 times more nerve endings than a human's hand. The masked mammals use their supersensitive digits to feel for food in murky water, unzip backpacks, and open trash cans.

HUMAN, I TOO LOVE



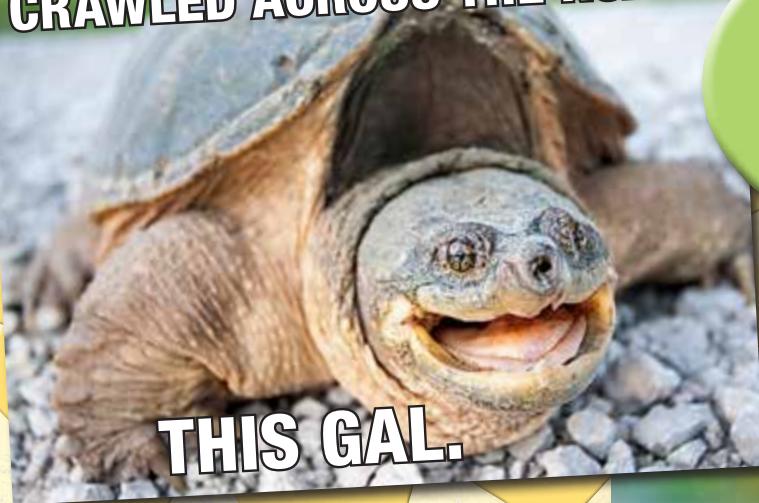
JUNK FOOD.



BURP.

The bigger they are, the harder they call. To make their namesake calls, male spring peepers inflate their throats and let the air squeak out. When fully inflated, the throat on this thumbsized frog can be nearly as big as the rest of its body!

OH, SNAP! WHO JUST CRAWLED ACROSS THE ROAD?



THIS GAL.

In the spring, female snapping turtles wander widely to find a place to lay their eggs. The temperature of the nest determines whether the eggs will hatch as boy or girl snappers.



WHEN YOU WANT PIZZA, BUT YOUR PARENTS FIX BRUSSELS SPROUTS.

THERE'S ALWAYS ONE CLOWN



WHO RUINS YOUR SELFIE.

Geronimo! Wood ducks nest in holes high up in trees. A day after hatching, baby wood ducks waddle to the entrance of their nest and bail out. The little fluffballs can fall more than 250 feet without being injured.

THE STRUGGLE TO SURVIVE ISN'T ALWAYS A FAIR FIGHT

THIS ISSUE:

RED FOX VS MEADOW JUMPING MOUSE

Illustrated by
David Besenger

Fearsome focus

The fast, agile fox keeps the mouse in its sights.

Escape artist

With its long hind feet, the little mouse can spring more than a yard high and just as far forward. Once deep in the grass, it can sit motionless until danger passes.

AND THE WINNER IS...

The fox blows by. The mouse is safe. For now. The mouse lands in tall marsh grass, where it freezes.

STRANGE but TRUE!

YOUR GUIDE TO ALL THE
UNUSUAL, UNIQUE,
AND UNBELIEVABLE STUFF
THAT GOES ON IN NATURE

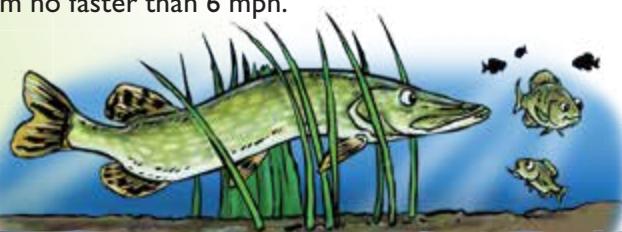
As you might have guessed, **SWAMP RABBITS** live in wetter habitats than their cottontailed cousins. One downside to this waterlogged lifestyle is finding a dry place to use the bathroom. So bayou bunnies often leave droppings on logs and stumps.



Ah-choo! In terms of the number of spores released, **RED CEDAR TREES** rank near the top of Missouri's pollen-producing plants. On spring days, male cedars release so much pollen it sometimes looks like clouds of smoke are rolling off the trees.



When lunging after prey, **NORTHERN PIKE** can reach speeds of 10 mph. Although this doesn't sound like such a *fantastic* feat, Michael Phelps — who has won more Olympic medals than any other person — can swim no faster than 6 mph.



Butt out! During spawning season, male **CREEK CHUBSUCKERS** stake out territories in shallow, pebble-strewn streams. If a rival male strays too close to another chubsucker, the two fish fight by butting each other with their bumpy heads.



With their heavy, leathery armor, you wouldn't expect **NINE-BANDED ARMADILLOS** to be speed demons. But they are. The football-shaped mammals can reach speeds of 30 mph — about as fast as a frightened cottontail.

AMERICAN WOODCOCKS rock their bodies backward and forward while searching for food.



Biologists aren't sure why the chubby birds do this, but vibrations from the motion may bring earthworms — a woodcock's favorite snack — to the surface.

VIRGINIA RAILS are perfectly built for moving through dense vegetation. Along with their skinny bodies — they are, in fact, skinny as a rail — they have extra-tough forehead feathers that can withstand the wear and tear of pushing through cattails and rushes.



HOW TO

Hunt for Creek Critters

Biologists call the squiggly, little creepy-crawlies living in a stream “benthic macroinvertebrates.” And though they may be a mouthful to say, they’re fun to catch, and they offer clues about the health of a stream.

Say What?

“Benthic” refers to creatures that live at the bottom of the stream. “Macro” means they’re big enough to see with the naked eye. And “invertebrate” describes animals that lack a backbone.



Heads Up!

Always get an adult’s permission before wading into a stream.



HERE'S WHAT YOU NEED >

- Aquarium dip net or kitchen sieve
- White ice cube tray
- Tweezers
- Magnifying glass
- Rubber boots or wading shoes

HERE'S WHAT YOU DO

Find a riffle. This is an area where shallow water tumbles over rocks. The water picks up oxygen as it splashes. Because all creatures need oxygen, lots of macroinvertebrates live in riffles.

Set your net. Place your dip net or sieve in the riffle and stand upstream.

Do the benthic boogie. Shuffle your feet in the stream gravel and scrub rocks with your hands. This will dislodge creatures clinging to the rocks, and some of them will flow into your net.

No riffle? No problem. Search along the stream bank where plant roots dangle into the water. Place your dip net downstream from a root mat and kick water through the roots to dislodge creatures hiding inside.

Sort your catch. Use tweezers to gently pick macroinvertebrates out of your net. Place them in a white ice cube tray filled with water from the stream. Use the Creepy-Crawly Guide to identify what you've caught.

Set them free. When you're done observing your catch, return the creatures to the place where you collected them.



Creepy-Crawly Guide

Pollution Sensitive



Stonefly



Caddisfly



Hellgrammite



Riffle beetle



Gilled snail

Somewhat Sensitive



Dragonfly



Scud



Crane fly



Mussel



Crayfish

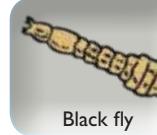
Not Sensitive



Aquatic worm



Leech



Black fly



Midge fly



Pouch snail

Join a Stream Team!

If you love good fishing, clean water, or simply splashing around in a stream, join a Stream Team! As part of the team, you'll pitch in to pick up litter, test water to make sure it's clean, or help with many other fun activities to protect your local waterway. To learn more, wade over to mostreamteam.org.

Caddisfly in the Coal Mine

Some macroinvertebrates are so sensitive to pollution that they live in only the cleanest of streams. Others can handle a little pollution, but not much. And some aren't that sensitive to pollution and will survive in everything from pristine to filthy water.

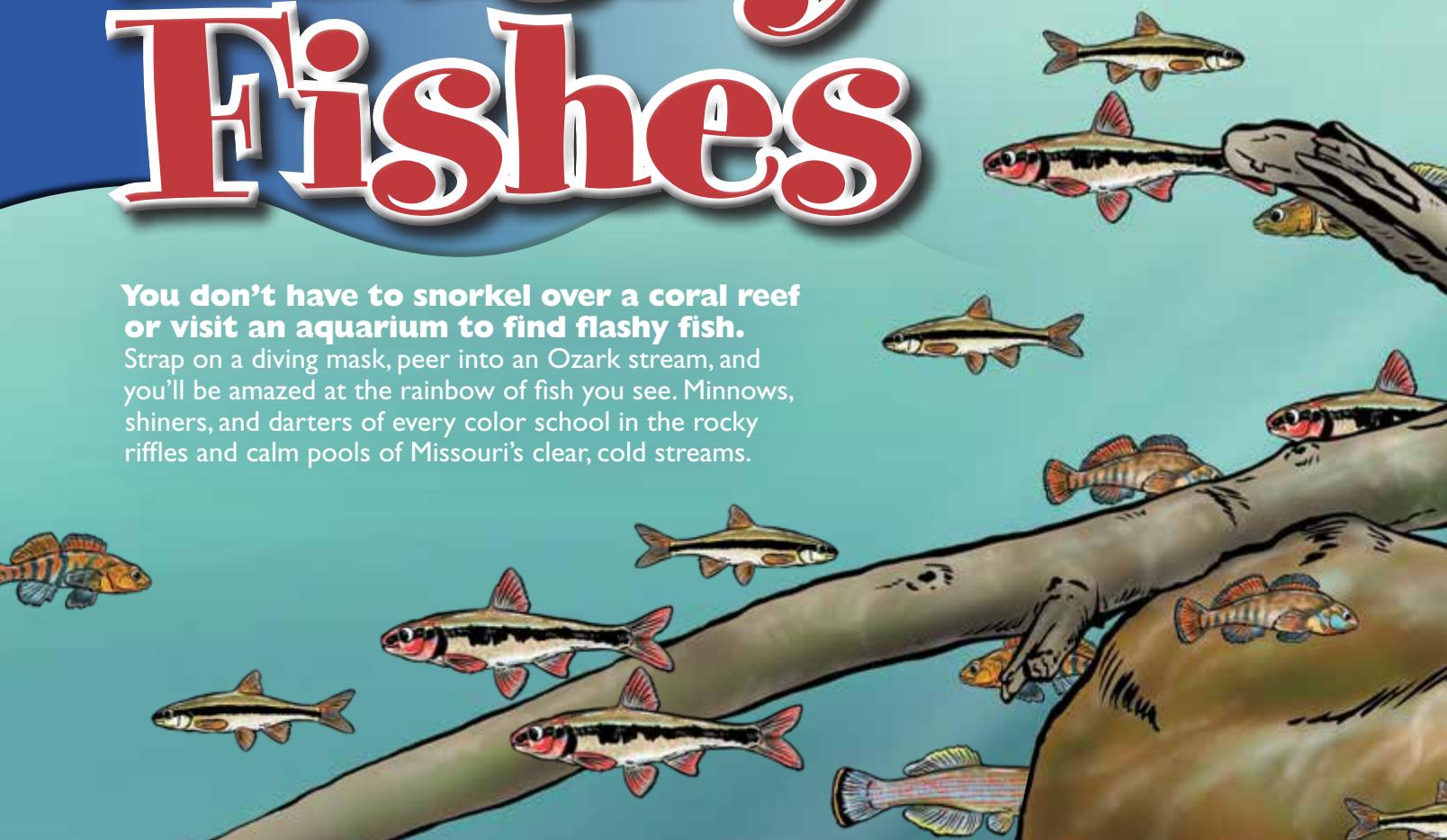
If you catch lots of pollution-sensitive macroinvertebrates, your stream is probably healthy. But if all you find are critters that aren't sensitive to pollution, your stream may need a clean-up.

XPLOR·MOR

Flashy Fishes

You don't have to snorkel over a coral reef or visit an aquarium to find flashy fish.

Strap on a diving mask, peer into an Ozark stream, and you'll be amazed at the rainbow of fish you see. Minnows, shiners, and darters of every color school in the rocky riffles and calm pools of Missouri's clear, cold streams.



WHAT IS IT?

— FROM PAGE 3 —

The male wood duck is colorful but secretive. It lives along forested waterways, where it nests with its mate in tree cavities. The only way you may know wood ducks are near is by their

high, soft whistle. Young wood ducks drop from their nest and into the water a day after they hatch. In fall, the male loses his breeding plumage and takes on the drab colors of winter. Learn more at mdc.mo.gov/field-guide.



RE...

How many of each kind of fish can you find?

Hint: There are 53 fish in total.



Ozark minnow



Northern studfish



Orangethroat darter



Bleeding shiner



Rainbow darter



Banded sculpin



Answer: Ozark Minnow - 12; Bleeding shiner - 9; Northern Studfish - 7; Rainbow Darter - 7; Orangethroat Darter - 10; Banded Sculpin - 8

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FREE TO MISSOURI HOUSEHOLDS

CRITTER CORNER

Double-Crested Cormorant



- Cormorant males sport small feather tufts on either side of their head, but only during breeding season. These social birds nest near water, where they dive for fish. When a cormorant pops up for air, only its neck and head show above water. It sinks so low because its feathers have few of the oils that keep other water birds afloat.
- Cormorants spread their wings in the sun to dry out their feathers. Learn more at mdc.mo.gov/field-guide.